World 1

Super Ultimate Graphing Challenge

Name:

Level 1

Initial Position:

Initial Velocity:

a) Describe the behavior of the object in words.

b) What does the **horizontal axis** of the graph represent? What does the **vertical axis** represent?

c) Why does the graph still form even if the object is not moving? Explain your answer.

Level 2

Initial Position:

Initial Velocity:

a) Describe the behavior of the object in words. Be specific!

b) What does it mean if the object's **velocity** is **negative**? Explain your answer.

Level 3

Initial Position:

Initial Velocity:

a) Describe the behavior of Ruggles in words. Be specific!

Level 4

Initial Position:

Initial Velocity:

a) Describe the behavior of the object in words. Be specific!

b) How is the **initial position** of the object represented on the graph?

Level 5

Initial Position:

Initial Velocity:

a) At what time does the object cross the **origin**? What is the object's **velocity** when it does this?

Level 6

a) Describe what happens when you set Ruggles in motion and then let go of the keys.

b) Do you need to keep speeding up Ruggles for the entire 6 seconds? Explain why or why not.

Level 7

Have fun! If this level takes too long, feel free to skip ahead to Level 8 from the menu.

Level 8

Initial Position:

Initial Velocity:

At clock reading:

Set velocity to:

a) Describe the behavior of the object in words. Be specific!

b) What is the **displacement** of the object from 0 to 5 seconds? Show how you calculated this.

Level 9

Initial Position:

Initial Velocity:

At clock reading:

Set velocity to:

a) Compare the object's **speed** from 0-3 seconds to its **speed** from 3-6 seconds. Explain.

b) What is the **displacement** of the object from 0 to 6 seconds? Explain what this means.

Level 10	Initial Position:	Initial Velocity:
	At clock reading:	Set velocity to:

a) What is Ruggles **speed** as he catches the first chocolate ice cream scoop? What is his **velocity**? Explain the difference between these two quantities.

Level 11	Initial Position:	Initial Velocity:
	At clock reading:	Set velocity to:

a) What happens to the object at 3 seconds? How is this shown by the graph?

Level 12	Initial Position:	Initial Velocity:
	At clock reading:	Set velocity to:

a) How is the **velocity** of the object represented on the graph? Explain your answer.

Level 13

a) In which time interval does Ruggles need to move the **fastest**? How do you know?

b) In which time interval does Ruggles need to move in the **negative direction**? How do you know?

Level 14 Have fun! If this level takes too long, feel free to skip ahead to Level 15 from the menu.

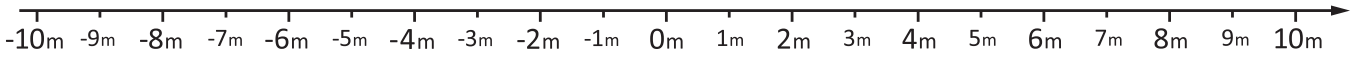
Level 15	Initial Position:	Initial Velocity:
At clock reading:		Set velocity to:
At clock reading:		Set velocity to:

Level 16	Initial Position:	Initial Velocity:
At clock reading:		Set velocity to:
At clock reading:		Set velocity to:

Level 17	Initial Position:	Initial Velocity:
At clock reading:		Set velocity to:
At clock reading:		Set velocity to:

Level 18	Initial Position:	Initial Velocity:
At clock reading:		Set velocity to:
At clock reading:		Set velocity to:

a) Turn on **Motion Tracking** by clicking the box on the top right, and then complete the level. In the space below, draw the dots that represent the position of the object at each second.



b) Use the motion tracking dots to **describe** the object's motion. How this is consistent with the graph?

Level 19	Initial Position:	Initial Velocity:
At clock reading:		Set velocity to:
At clock reading:		Set velocity to:

a) By analyzing the values that you set for the object's velocity, explain how the object ends up back at its original position after the full 6 seconds. Hint: You will need to look at the numbers!